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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/827,982	04/06/2001	Aditi Vartak	EV0024	5183

7590
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01/15/2004

EXAMINER

WINTER, GENTLE E

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 01/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/827,982

Applicant(s)

VARTAK ET AL.

Examiner

Gentle E. Winter

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5 and 7-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1,3-5 and 7-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Remarks/Amendment

1. The remarks and amendments have been carefully considered. Unfortunately, the remarks and amendment are not deemed persuasive at this time, and the rejection cannot be withdrawn at this time.
2. Initially it is noted that due to a minor typographical error claims 3 and 4 were presented as "original" claims reflected amendments. The amendments are properly indicated using conventional procedures and no ambiguity exists as a result of the indication of "(Original)".
3. As to claim 1, wherein the amendment discloses "wherein the first and second electrode remain connected during recharging" the language is drawn to a future intended use and not to structure, and as such is accorded weight only to the extent that the prior art must be *capable* of performing the indicated function. A point not currently at issue. As to the deletion of a switch from claim four, the prior art of record discloses the use of a transformer.

A

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1, 3, 5, 34, 36, and 37 are rejected under 35 U.S.C. 102(a) as being anticipated by United States Patent No. 6,127,061 to Shun et al (Shun). Shun reads on the claim as follows

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3. Claim 1 is drawn to a rechargeable electrochemical cell. Disclosed as a rechargeable battery see e.g. column 13, line 14 *et seq.*, electrochemical cell see e.g. column 1, line 6 *et seq.* Including a first and second electrode and a third electrode electrically isolated from the second electrode. See FIG. 10, showing an air-zinc type battery such as is discussed with respect to FIGS. 2A, 2B, and 2C, which include a third or auxiliary electrode 200. The instant claim further discloses that the cell is discharged upon application of a load across the first electrode and the second electrode. This is illustrated in figures 10 and 11 and associated text; the load is indicated by a resistor. Additionally, Shun discloses that the cell is recharged upon application of the voltage across the first electrode and the third electrode. Element 204 represents the charging element. See e.g. column 13, line 14 *et seq.* and figures 10 and 11 and relevant associated text. As to the limitation that the first electrode and the second electrode remain connected during recharging. The same is disclosed by Shun see e.g. column 13, line 14 *et seq.* and figures 10 and 11 and relevant associated text.
4. As to claim 3, disclosing that the second electrode is in isolation from the voltage across the first electrode and the third electrode. This is indicated by the switch element 202.
5. As to claims 5, and 34, 36, and 37 disclosing a rechargeable electrochemical cell system that includes a plurality of cells, and each cell wherein each cell substantively mirrors the cell of claim 1. The Shun reference discloses that one cell "may typically be placed in parallel or series with a plurality of other cells in a container." See e.g. column 9, line 49 *et seq.*

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6. As indicated above, the rechargeable electrochemical cell system as set forth in claim 5, wherein the first electrode and the third electrode remain connected during recharging. The same is disclosed by Shun see e.g. column 13, line 14 *et seq.* and figures 10 and 11 and relevant associated text.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 4, 7-33, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shun as set forth above and United States Patent No. 5,659,237 to Divan et al. (Divan).

3. As to claim 4, disclosing that the isolation is effectuated with a transformer Divan discloses: "A transformer having a single primary winding and multiple secondary windings is used to link the converter to the individual battery cells." See e.g. column 4, line 60 *et seq.* especially line 67 *et seq.* A transformer is routinely used in charging batteries. The artisan would have used a transformer in order to bring the voltage into a range and form most conducive to optimal charging (reversing the reaction that occurs). Since the same component, in the same configuration, is disclosed of necessity the component would function in the same way.

4. As to claims 7 and 35 further limiting claim 5 and disclosing that the voltage for recharging is applied by one or more transformers. As a preliminary matter the concept of charging batteries using transformers is widely taught especially in applications related to subdermal or otherwise inaccessible power supplies. Divan discloses a transformer based charging system in claim 12 of the patent. The artisan would have been motivated to make the combination for the reasons explicitly set forth in Divan namely to provide a "simple, low-cost technique for charge equalization of a series connected string of battery cells". See e.g. column 4, line 46 *et seq.*
5. As to claims 8, and 17 further limiting claim 7, and disclosing that the transformer comprises a single primary winding and a plurality of secondary windings. Divan discloses: "A transformer having a single primary winding and multiple secondary windings is used to link the converter to the individual battery cells." See e.g. column 4, line 60 *et seq.* especially line 67 *et seq.*
6. As to claim 9 further limiting claim 8, disclosing that the primary winding is driven by a power source. This is inherent, and if applicant takes the position that the same is not inherent, then applicant will be required to provide an explanation as to how the system works without a power source, or the claims will be rejected for lack of enablement.
7. As to claim 10 and 14 further limiting claim 9, disclosing that the system further includes a switching power converter coupled to the power source and the primary winding. The same is

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disclosed by Divan. See e.g. column 13, line 3 *et seq.* The motivation for making the instant combination is the same as that explicitly disclosed by Divan, namely, charge equalization. Or more specifically, to "direct charge from the source voltage V_s to the weakest cells in the battery string 56, while delivering less charge to more fully charged cells, and no charge to those cells which are already fully charged."

8. As to claims 11 and 15, further limiting claim 10, wherein the control unit comprises an oscillator. It is noted that the term "oscillator" is a generic term. The same is disclosed column 17, line 14 *et seq.* This is an LC oscillator.

9. As to claim 12, 13, 16 further limiting claim 11, disclosing that the switching device comprises a MOSFET device. The same is disclosed at e.g. column 13, line 16 *et seq.* The artisan would have been motivated to use a MOSFET in part, because the MOSFET is ubiquitous in such applications and because the MOSFET provides an off-the-shelf Gate Driver that can be used to produce gate drive signals, as disclosed by Divan.

10. As to claims 18-20 disclosing a diode between at least one pair of the secondary winding and the third electrode. The diode, and motivation for its placement is given by Divan. See e.g. column 17, line 14. The magnetizing energy, indicated by the magnetizing current I_m , is gradually reset to zero by conduction through the primary side diodes. The diodes also allow for shunting of transient spikes or other spurious elements. The diode also may serve as part of a

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rectifier. The same is disclosed by Divan and throughout the art. See e.g. column 4, line 60 *et seq.*

11. As to claims 21-23, 25-27 disclosing a cell-conditioning unit including a switching power converter. The rectifier and switching power converter described above is inherently a cell conditioning device, rectifier, and transient spike filter.

12. As to claim 24, disclosing that the cell-conditioning unit comprises a battery parameters monitor. It is unclear how a monitor conditions a cell. It is presumed that the monitor provides data to assist with the conditioning. Divan discloses a monitor for tracking degree of charge. The artisan would have been motivated to make the instant combination for the reasons explicitly set forth in Divan, namely to distribute charge and prevent overcharging.

13. As to claims 28-33 disclosing that the voltage is applied across the recharging circuit with a capacitor. The same is disclosed by Divan. The artisan would have been motivated to make the instant combination for the reasons explicitly set forth in Divan. Specifically, Divan discloses: "Preferably, capacitors 112, 114 and 116 are connected in parallel with the battery cells 72, 74 and 76 as output filters, to filter out any high frequency ripple by the converter 92, as well as to decouple unequal lead inductances between the transformer secondaries 100, 102 and 104, and the individual battery cells 72, 74 and 76." See e.g. column 10, line 62- column 11, line 32. The capacitor also serves as a filter. Inherently the capacitor is charged by the power supply by operation of a switch device.

Conclusion

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
2. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.
3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gentle E. Winter whose telephone number is (571) 272-1310. The examiner can normally be reached on Monday-Friday 7:00-3:30.
4. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P. Gulakowski can be reached on (571) 272-1302. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular

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communications and (703) 872-9311 for After Final communications. The direct fax number for this examiner is (571) 273-1310.

5. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Gentle E. Winter
Examiner
Art Unit 1746

January 12, 2004

Zeinab Elarini

**ZEINAB EL-ARINI
PRIMARY EXAMINER**